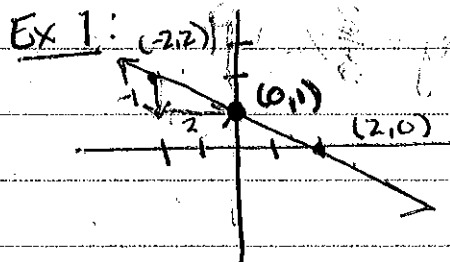


## Notes 11/12 - Writing Equations of Linear Functions

- If you want to write an equation in slope-intercept form ( $y = mx + b$ ), you need to know

- slope ( $m$ ) (rate of change)
- y-intercept ( $b$ )



$$m = \frac{\Delta y}{\Delta x} = -\frac{1}{2}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 2}{0 - (-2)} = -\frac{1}{2}$$

$$b = 1 \quad (0, 1)$$

Plug them in!

$$y = mx + b$$

$$y = -\frac{1}{2}x + 1$$

Notice: The y-intercept is always where  $x = 0$

Ex 2:

x	y
-1	4
0	6
1	8

$\Delta y = 2$   
 $\Delta x = 1$

$$m = \frac{\Delta y}{\Delta x} = \frac{2}{1} = 2$$

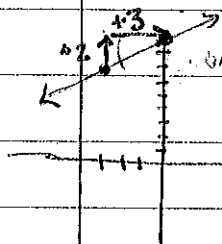
$$b = 6$$

$$y = mx + b$$

$$y = 2x + 6$$

Ex 3: Write the equation of the line through the points  $(0, 9)$  and  $(-3, 7)$

$$b = 9$$



$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{7 - 9}{-3 - 0} = \frac{-2}{-3} = \frac{2}{3}$$

x	y
0	9
-3	7

$$y = \frac{2}{3}x + 9$$

Ex 4: Write the equation of a line with slope of 2, through  $(3, 8)$ .

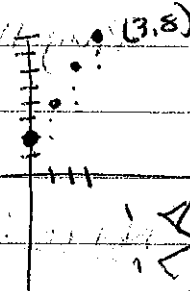
$$y = 2x + b$$

$$8 = 2(3) + b$$

$$8 = 6 + b$$

$$b = 2$$

$$y = 2x + 2$$



x	y
0	2
3	8